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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/817,155	03/27/2001	Masato Hasegawa	50395-096	7094

7590 02/28/2006

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EXAMINER	
LEE, SHUN K	

ART UNIT	PAPER NUMBER
2884	

DATE MAILED: 02/28/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)
	09/817,155	HASEGAWA ET AL.
	Examiner	Art Unit
	Shun Lee	2884

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *08 August 2005 and 08 December 2005*.

2a)☒ This action is **FINAL**. 2b)☐ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *60-104* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *60-104* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on *14 May 2003* is/are: a)☒ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☒ All b)☐ Some * c)☐ None of:

1.☒ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☐ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☒ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date *0904*.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: _____.

DETAILED ACTION

Claim Objections

1. Claim 60 is objected to because of the following informalities: "the resin part" on line 7 in claim 60 should probably be --the resin layer-- (see "a resin layer" on line 2 in claim 62). Appropriate correction is required.

Claim Rejections - 35 USC § 112

2. The following is a quotation of the first paragraph of 35 U.S.C. 112:

> The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same and shall set forth the best mode contemplated by the inventor of carrying out his invention.

3. Claims 60-63, 65, 66/60, 66/62, 67/66/60, 67/66/62, 68/60, 68/62, 69/68/60, 69/68/62, 74-77, 78/60, 78/62, 82-86, 93-98, and 104 are rejected under 35 U.S.C. 112, first paragraph, as failing to comply with the written description requirement. The claim(s) contains subject matter which was not described in the specification in such a way as to reasonably convey to one skilled in the relevant art that the inventor(s), at the time the application was filed, had possession of the claimed invention.

Independent claim 60 and 62 recite the limitation "a light-shielding ratio of the lens body, Ti/Tv, is greater than the product of the light-shielding ratio of the ceramic part and that of the resin part". Applicant states (second paragraph on pg. 13 of remarks filed 22 April 2005) that support for the claim limitation of Ti/Tv(lens) > Ti/Tv(ceramic part) x Ti/Tv(resin part) is found in Table 5 of Example 3 of the present disclosure. However, Table 5 of Example 3 only provides values for Ti/Tv (lens) of certain average thickness of a resin layer coated on the ceramic part. Values of Ti/Tv in

Table 4 cannot be used for Ti/Tv(resin part) since the values of Ti/Tv in Table 4 were obtained from resin samples with mirror finished surfaces (see pg. 35, lines 12-14). Moreover, even if values of Ti/Tv in Table 4 were used, No. 3 in Table 4 have a Ti/Tv(lens) = 4474 which is greater than 3487 (*i.e.*, Ti/Tv(ceramic part) = 3170 x Ti/Tv(resin part) = 1.1). Whereas No. 6 in Table 4 have a Ti/Tv(lens) = 9889 which is less than 11729 (*i.e.*, Ti/Tv(ceramic part) = 3170 x Ti/Tv(resin part) = 3.7). Therefore, there does not appear to be a written description of the new claim limitation in the application as filed.

Claim Rejections - 35 USC § 103

4. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

5. This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

6. Claims 64, 78/99, 78/100, 78/101, 78/102, 87-90, and 99-102 are rejected under 35 U.S.C. 103(a) as being unpatentable over Tower *et al.* (US 6,020,628) in view of Grossinger *et al.* (US 5,712,622), Silvestrini *et al.* (US 4,323,619), and Raj *et al.* (US 5,183,602).

In regard to claims **64**, **78**, **87-90**, and **99-102**, Tower *et al.* disclose (Figs. 1 and 5) a sensor, having a lens body (12), comprising ceramic (column 2, line 63 to column 3, line 7), a supporting part (16, 60) comprised of metal (column 3, lines 35-45, column 4, lines 44-53), which supports said lens body (12), and a detection part (*i.e.*, optically active portion 32 of the electronic device 24), which detects the light that has been transmitted through said lens body (12). While Tower *et al.* also disclose (column 2, line 63 to column 3, line 7) that the lens body is formed from any suitable ceramic such that light of a desired wavelength will pass through the lens body with minimal distortion or attenuation, the sensor of Tower *et al.* lacks that the lens body contains a pigment (*e.g.*, carbon black, graphite, diamond, titanium black, an iron oxide, molybdenum, tungsten, iron, nickel, cobalt, copper, silver, compounds thereof, TiO_2, BN, AlN, ZnO, ZnS, or mixtures thereof) with an average particle diameter of 0.01 to 2 μm that shields visible light with the degree of dispersion R of the 0.001 to 1 mass % (or 0.001 to 0.01 mass %) pigment in the lens body less than or equal to 10% so that the value of the ratio Ti/Tv of the lens body is ≥5, ≥15, ≥150 or ≥300 (*i.e.*, Ti ≥ 5Tv, Ti ≥ 15Tv, Ti ≥ 150Tv, or Ti ≥ 300Tv), wherein Ti is a linear transmittance of light of 8 to 12 μm wavelength and Tv is linear transmittance of 830 nm laser beam. Grossinger *et al.* teach (column 2, lines 1-20; column 4, lines 40-55) to provide a lens with pigment

particles (*e.g.*, 10% or a considerably reduced pigment amount) that shields visible light (*i.e.*, Tv ~ 0) from the sensor without distorting or attenuating infrared radiation (*i.e.*, Ti ~ 1). Further, Silvestrini *et al.* teach (column 2, lines 50-66; column 3, lines 51-62; column 4, lines 58-65) to provide a perfect dispersion of a pigment such as 0.2% to 0.8% by weight of 0.5 μm carbon black of the MT type in order to absorb light of less than 3 μm wavelength. In addition, Raj *et al.* teach (column 4, line 37 to column 5, line 15) that particles can be uniform dispersed in a ceramic. Therefore it would have been obvious to one having ordinary skill in the art at the time of the invention to perfectly disperse (*e.g.*, ≤10% R) a 0.01 to 2 μm pigment at 0.001 to 2 mass % in the ceramic lens body of Tower *et al.*, in order to shield the optically active portion of the electronic device from visible light (*i.e.*, 5Tv ~ 0, 15Tv ~ 0, 150Tv ~ 0, or 300Tv ~ 0) without distorting or attenuating the desired wavelengths of infrared radiation (*e.g.*, desired 8 to 12 μm wavelengths with Ti ~ 1 which is greater than 5Tv, 15Tv, 150Tv, or 300Tv) as taught by Grossinger *et al.*

7. Claims 66/99, 66/100, 66/101, 66/102, 67/66/99, 67/66/100, 67/66/101, 67/66/102, 91, and 92 are rejected under 35 U.S.C. 103(a) as being unpatentable over Tower *et al.* (US 6,020,628) in view of Grossinger *et al.* (US 5,712,622), Silvestrini *et al.* (US 4,323,619), and Raj *et al.* (US 5,183,602) as applied to claims 90 and 99-102 above, and further in view of Carnall, Jr. *et al.* (US 3,131,238).

In regard to claims **66** and **67** (which are dependent on any one of claims 99, 100, 101, or 102) and claim **91** (which is dependent on claim 90), while Tower *et al.* also disclose (column 2, lines 63-66) that the lens body is formed from any suitable ceramic

or glass such that that light of a desired wavelength will pass through the lens body with minimal distortion or attenuation, the modified sensor of Tower *et al.* lacks that the main component of said ceramic of said lens body is zinc sulfide (ZnS) having ≥40% or ≥50% linear light transmittance at 8 to 12 μm wavelength. However, zinc sulfide ceramic lenses are well known in the art. For example, Carnall, Jr. *et al.* teach (column 5, line 50 to column 6, line 62) a 1.6 mm thick zinc sulfide infrared optical element have a linear light transmittance of ≥40% (*e.g.*, 75% at 8 μm wavelength). Therefore it would have been obvious to one having ordinary skill in the art at the time of the invention that a suitable material for the lens body of Tower *et al.* is zinc sulfide which has a linear light transmittance of ≥40% at a desired infrared wavelength (*e.g.*, 8 to 12 μm wavelength), in order to pass the desired infrared wavelength light (*e.g.*, 8 μm wavelength) through the lens body with minimal distortion or attenuation.

In regard to claim **92** which is dependent on claim 91, Tower *et al.* in view of Grossinger *et al.*, Silvestrini *et al.*, and Raj *et al.* is applied as in claim 88 above.

8. Claims 68/99, 68/100, 68/101, 68/102, 69/68/99, 69/68/100, 69/68/101, 69/68/102, 91, and 92 are rejected under 35 U.S.C. 103(a) as being unpatentable over Tower *et al.* (US 6,020,628) in view of Grossinger *et al.* (US 5,712,622), Silvestrini *et al.* (US 4,323,619), and Raj *et al.* (US 5,183,602) as applied to claims 90 and 99-102 above, and further in view of Roy *et al.* (US 3,974,249).

In regard to claims **68** and **69** (which are dependent on any one of claims 99, 100, 101, or 102) and claim **91** (which is dependent on claim 90), while Tower *et al.* also disclose (column 2, line 63 to column 3, line 7) that the lens body is formed from any

suitable ceramic (*e.g.*, the main component is $MgAl_2O_4$ which is also referred to as spinel) or glass such that that light of a desired wavelength will pass through the lens body with minimal distortion or attenuation, the sensor of Tower *et al.* lacks that the $MgAl_2O_4$ lens body has ≥40% or ≥50% linear light transmittance at 3 to 5 μm wavelength. However, the properties of $MgAl_2O_4$ are well known in the art. For example, Roy *et al.* teach (column 5, lines 6-55) that $MgAl_2O_4$ has ≥40% linear light transmittance at 3 to 5 μm wavelength. Therefore it would have been obvious to one having ordinary skill in the art at the time of the invention that the $MgAl_2O_4$ lens body of Tower *et al.* have ≥40% linear light transmittance at 3 to 5 μm wavelength.

In regard to claim **92** which is dependent on claim 91, Tower *et al.* in view of Grossinger *et al.*, Silvestrini *et al.*, and Raj *et al.* is applied as in claim 88 above.

9. Claims 64, 70, 71, 87-90, and 99-102 are rejected under 35 U.S.C. 103(a) as being unpatentable over Castleman (US 6,153,881) in view of Grossinger *et al.* (US 5,712,622), Silvestrini *et al.* (US 4,323,619), and Raj *et al.* (US 5,183,602).

In regard to claims **64**, **70**, **71**, **87-90**, and **99-102**, Castleman discloses (Figs. 8 and 9) a sensor, having a lens body (232), comprising ceramic (*i.e.*, sapphire; column 13, lines 36-47), a supporting part (230) comprised of resin (*i.e.*, plastic housing; column 13, lines 11-20 and 36-47), which supports said lens body (232), and a detection part (236), which detects the light that has been transmitted through said lens body (232). The sensor of Castleman lacks that the lens body contains a pigment (*e.g.*, carbon black, graphite, diamond, titanium black, an iron oxide, molybdenum, tungsten, iron, nickel, cobalt, copper, silver, compounds thereof, TiO_2, BN, AlN, ZnO, ZnS, or mixtures

thereof) with an average particle diameter of 0.01 to 2 μm that shields visible light with the degree of dispersion R of the 0.001 to 1 mass % (or 0.001 to 0.01 mass %) pigment in the lens body less than or equal to 10% so that the value of the ratio Ti/Tv of the lens body is ≥5, ≥15, ≥150 or ≥300 (*i.e.*, Ti ≥ 5Tv, Ti ≥ 15Tv, Ti ≥ 150Tv, or Ti ≥ 300Tv), wherein Ti is a linear transmittance of light of 8 to 12 μm wavelength and Tv is linear transmittance of 830 nm laser beam. Grossinger *et al.* teach (column 2, lines 1-20; column 4, lines 40-55) to provide a lens with pigment particles (*e.g.*, 10% or a considerably reduced pigment amount) that shields visible light (*i.e.*, Tv ~ 0) from the sensor without distorting or attenuating infrared radiation (*i.e.*, Ti ~ 1). Further, Silvestrini *et al.* teach (column 2, lines 50-66; column 3, lines 51-62; column 4, lines 58-65) to provide a perfect dispersion of a pigment such as 0.2% to 0.8% by weight of 0.5 μm carbon black of the MT type in order to absorb light of less than 3 μm wavelength. In addition, Raj *et al.* teach (column 4, line 37 to column 5, line 15) that particles can be uniform dispersed in a ceramic. Therefore it would have been obvious to one having ordinary skill in the art at the time of the invention to perfectly disperse (*e.g.*, ≤10% R) a 0.01 to 2 μm pigment at 0.001 to 2 mass % in the sensor of Castleman, in order to shield the optically active portion of the electronic device from visible light (*i.e.*, 5Tv ~ 0, 15Tv ~ 0, 150Tv ~ 0, or 300Tv ~ 0) without distorting or attenuating the desired wavelengths of infrared radiation (*e.g.*, desired 8 to 12 μm wavelengths with Ti ~ 1 which is greater than 5Tv, 15Tv, 150Tv, or 300Tv) as taught by Grossinger *et al.*

10. Claims 72, 73, and 103 are rejected under 35 U.S.C. 103(a) as being unpatentable over Castleman (US 6,153,881) in view of Grossinger *et al.* (US 5,712,622), Silvestrini *et al.* (US 4,323,619), and Raj *et al.* (US 5,183,602) as applied to claims 70 and 71 above, and further in view of Erismann (US 5,818,337).

In regard to claims **72** and **73** (which are dependent on claim 70) and claims **73** and **103** (which are dependent on claim 71), while Castleman also discloses (column 13, lines 11-20 and 36-47) a plastic housing, the sensor of Castleman lacks that the plastic is high-density polyethylene. However, plastic housings are well known in the art. For example, Erismann teaches (column 2, lines 50-62) that a plastic housing comprising lens can be formed from a plastic substantially transparent to infrared radiation such as high-density polyethylene. Therefore it would have been obvious to one having ordinary skill in the art at the time of the invention to provide a known plastic for the plastic housing of Castleman such as high-density polyethylene which is substantially transparent to infrared radiation.

11. Claims 79 and 80 are rejected under 35 U.S.C. 103(a) as being unpatentable over Castleman (US 6,153,881) in view of Grossinger *et al.* (US 5,712,622), Silvestrini *et al.* (US 4,323,619), and Raj *et al.* (US 5,183,602) as applied to claims 99-102 above, and further in view of Adachi *et al.* (US 4,302,674).

In regard to claim **79** which is dependent on any one of claims 99, 100, 101, or 102, the modified sensor of Castleman lacks that said supporting part includes a cylindrical part, which is formed between the portion of said lens body that transmits light and said detection part. Adachi *et al.* teach (column 5, lines 46-58) to provide a

cylindrical part in order to receive only substantially perpendicular radiation relative to the detection part. Therefore it would have been obvious to one having ordinary skill in the art at the time of the invention to provide a cylindrical part between the lens body and the detection part in the modified sensor of Castleman, in order to receive only substantially perpendicular radiation relative to the detection part as taught by Adachi *et al.*

In regard to claim **80** which is dependent on claim 79, Castleman is applied as in claims 70 and 71 above.

12. Claim 81 is rejected under 35 U.S.C. 103(a) as being unpatentable over Castleman (US 6,153,881) in view of Grossinger *et al.* (US 5,712,622), Silvestrini *et al.* (US 4,323,619), Raj *et al.* (US 5,183,602), and Adachi *et al.* (US 4,302,674) as applied to claim 80 above, and further in view of Erismann (US 5,818,337).

In regard to claim **81** which is dependent on claim 80, Erismann is applied as in claims 72, 73, and 103 above.

Response to Arguments

13. Applicant's arguments filed 8 December 2005 have been fully considered but they are not persuasive.

Applicant argues (pg. 12 to third paragraph on pg. 15 of remarks filed 8 December 2005) that one skilled in the art, reading the original disclosure, would reasonably discern the limitation at issue in the claims since mirror finished surfaces are only required by the ceramic part and not by the resin part and that it is known to correct for thickness. Examiner respectfully disagrees. It should be noted that the issue is not

whether a part requires mirror finished surfaces or whether it is known to correct for thickness. The issue is that transmission measurements of optical components depend on a number of different factors. One of the critical factors is transmission at interfaces. For example, the transmission out of a glass surface into air is different than the transmission out of the same glass surface into water. Thus a lens body comprising of a ceramic part and a resin layer have at least one additional interface (*i.e.*, an interface formed by the ceramic part and the resin layer). One skilled in the art would not simply multiply numbers from Tables 2 and 4 (with or without correction for thickness) and compare this with Table 5 to derive the new claim limitation. Therefore, there does not appear to be a written description of the new claim limitation in the application as filed.

In response to applicant's argument (fourth paragraph pg. 15 to second paragraph on pg. 18 of remarks filed 8 December 2005) that the references fail to show certain features of applicant's invention, it is noted that the features upon which applicant relies (*i.e.*, specific quantities of a specific pigment material) are not recited in the rejected claim(s). Although the claims are interpreted in light of the specification, limitations from the specification are not read into the claims. See *In re Van Geuns*, 988 F.2d 1181, 26 USPQ2d 1057 (Fed. Cir. 1993).

Applicant also argues (last paragraph on pg. 18 of remarks filed 8 December 2005) that ceramics rarely allow perfect dispersion of minute amounts of additives. Examiner respectfully disagrees. An uniform dispersion of particles in a ceramic is known in the art. For example, Raj *et al.* teach (column 4, line 37 to column 5, line 15) a uniform dispersion of diamond particles in zinc sulfide ceramic by hot

pressing an intimate powder mixture and dispersion obtained by shear-milling and freeze-milling. Therefore, Applicant's arguments are not persuasive.

Conclusion

14. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

15. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Shun Lee whose telephone number is (571) 272-2439. The examiner can normally be reached on Tuesday-Friday.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, David Porta can be reached on (571) 272-2444. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

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